



Swarm: синхронизируем рой устройств

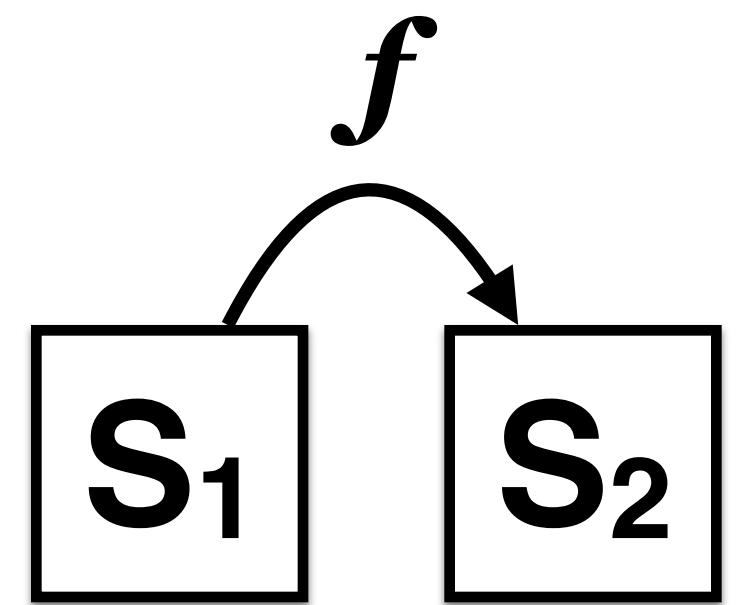
Грищенко Виктор HolyJS, СПб, 5 июня 2016

Синхронизация



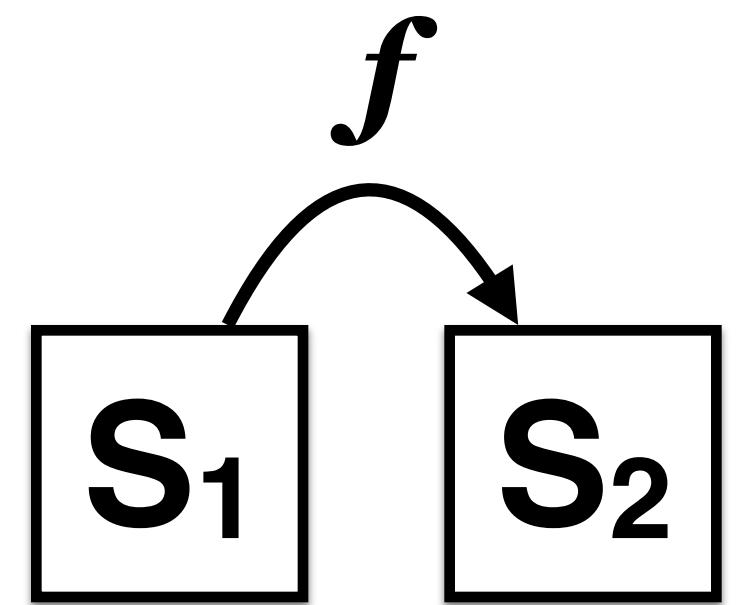
??!

??!

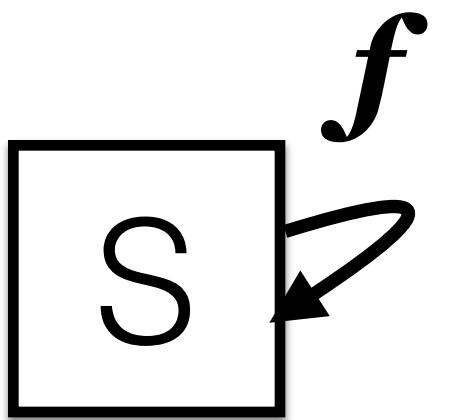


Redux

??!

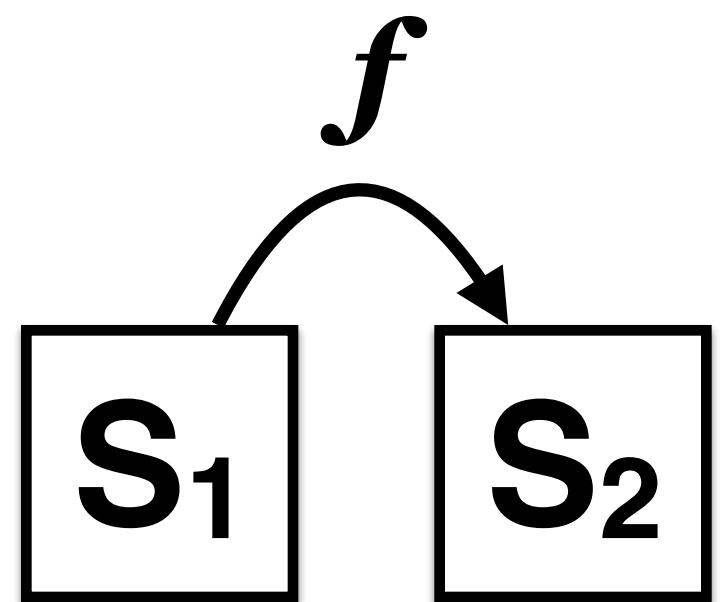


Redux

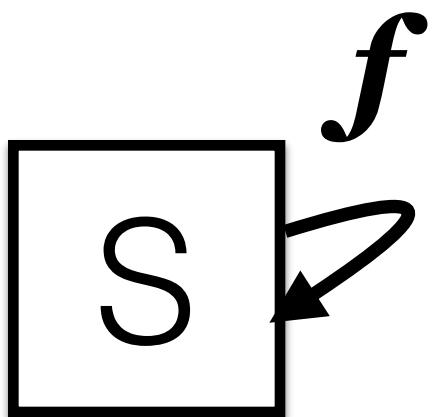


OOP

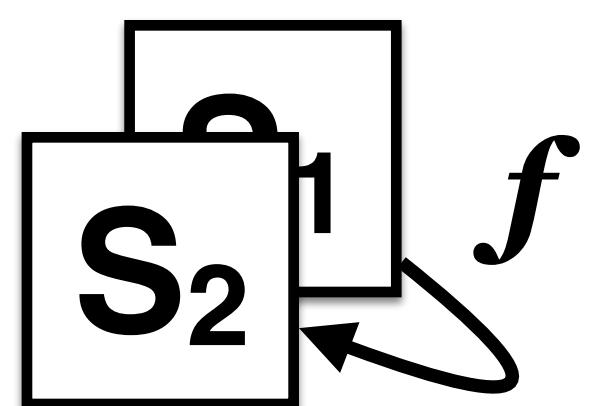
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Redux

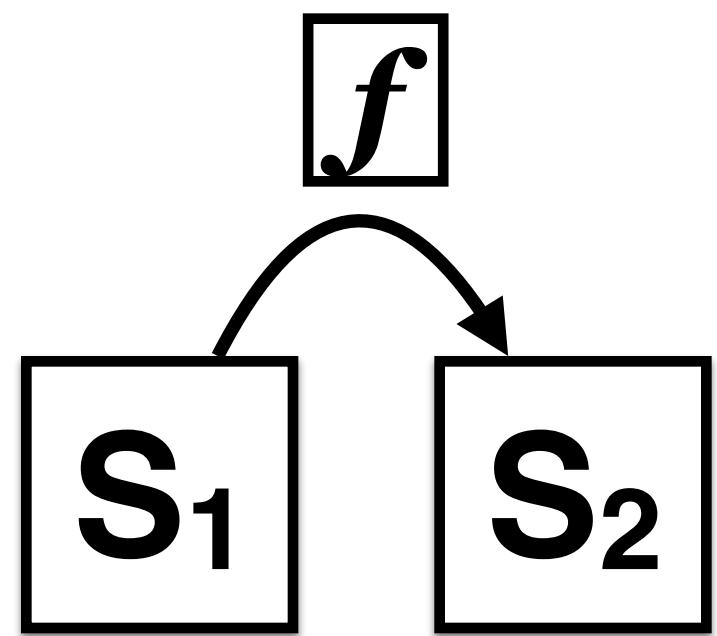


OOP

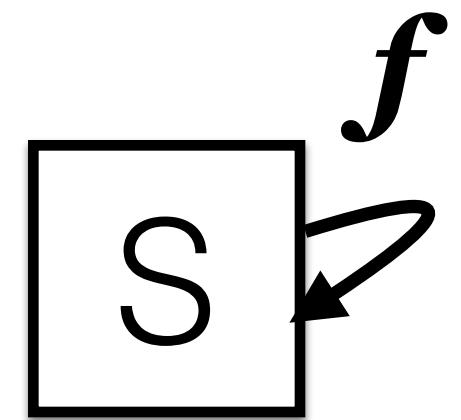


MVCC

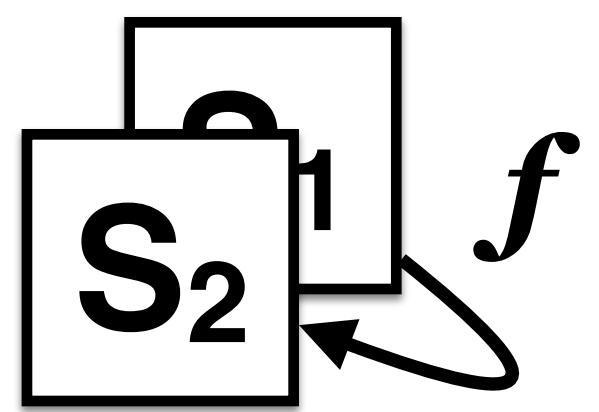
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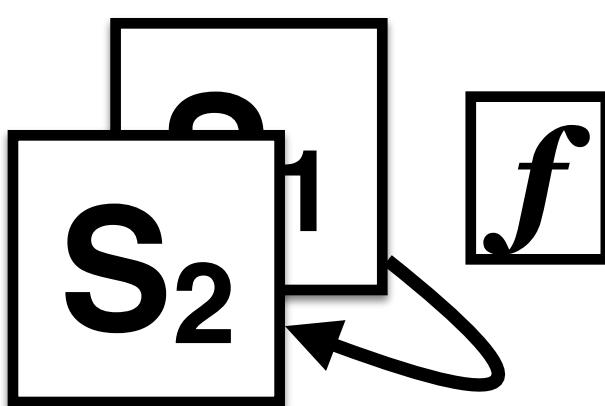
Redux



OOP

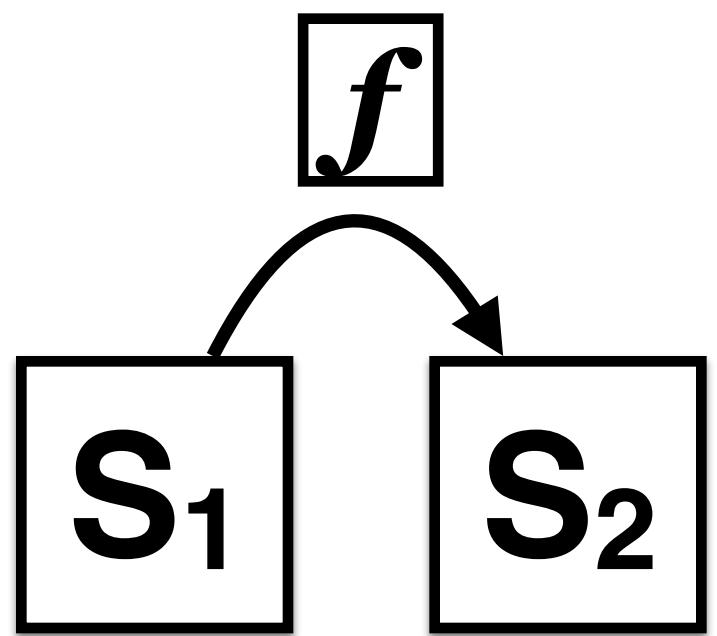


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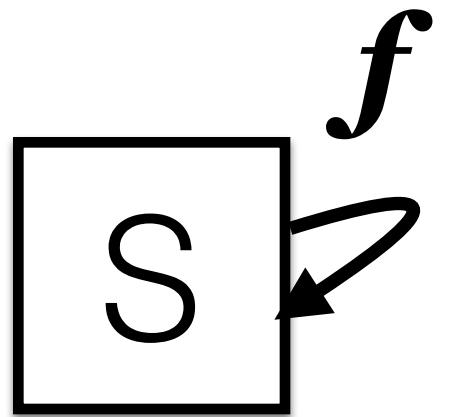


SMR

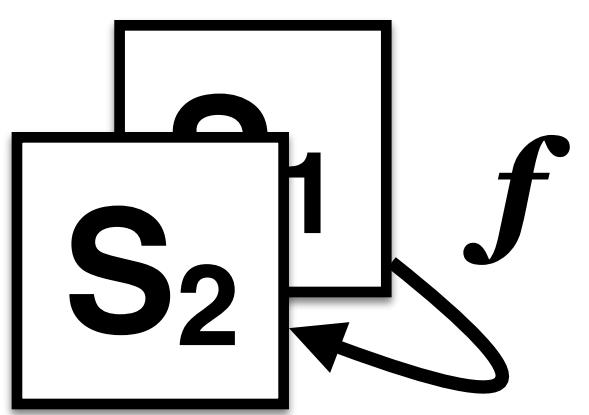
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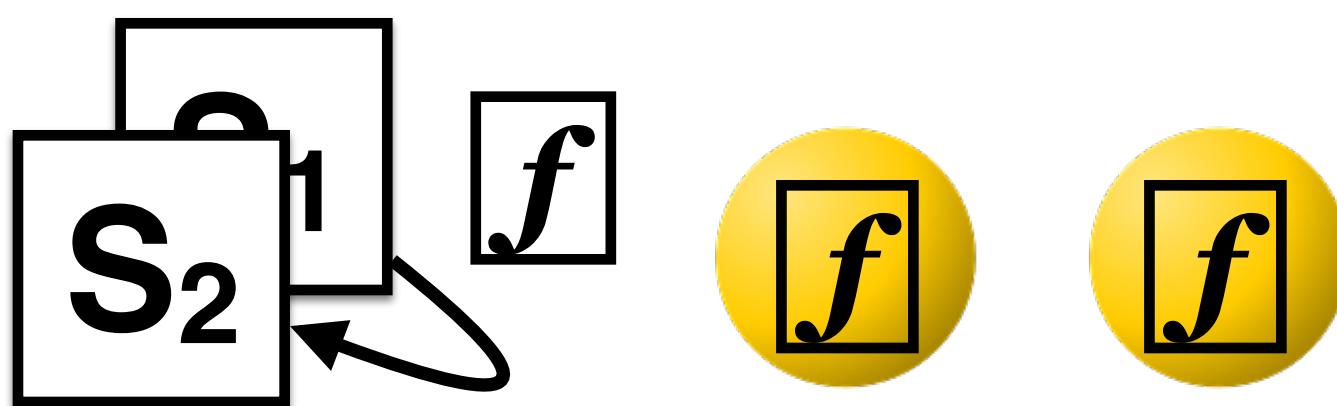
Redux



OOP

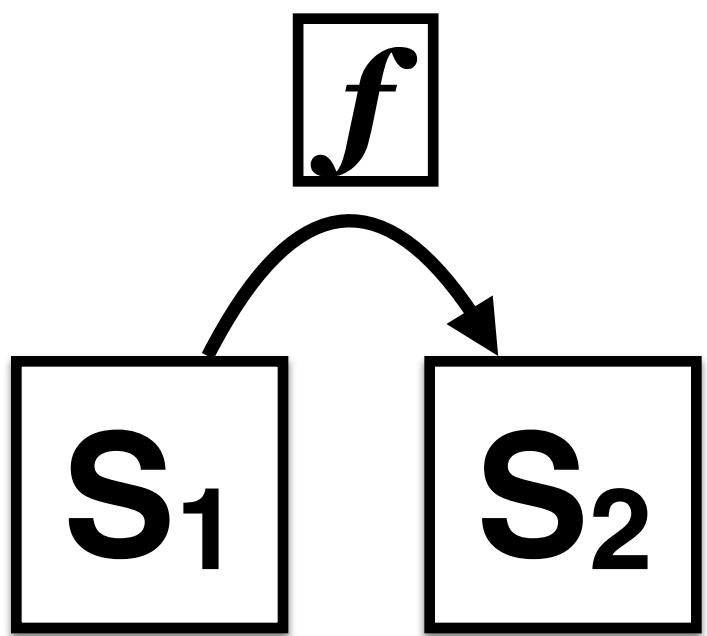


MVCC

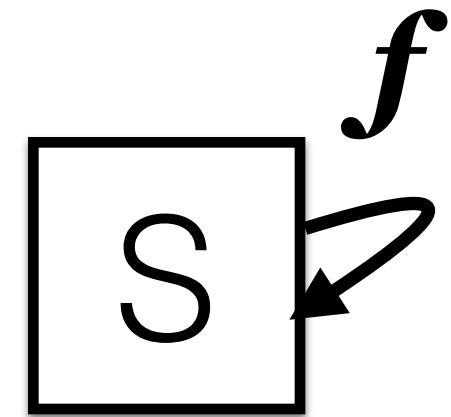


SMR

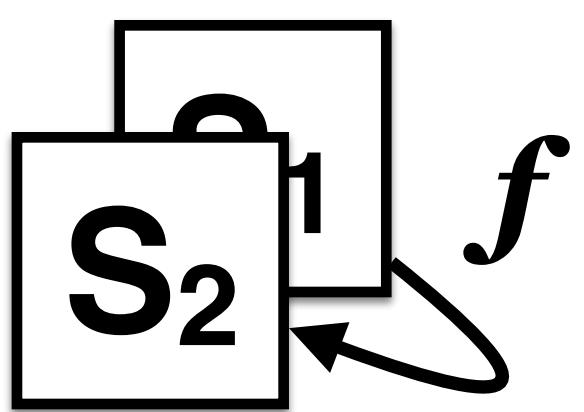
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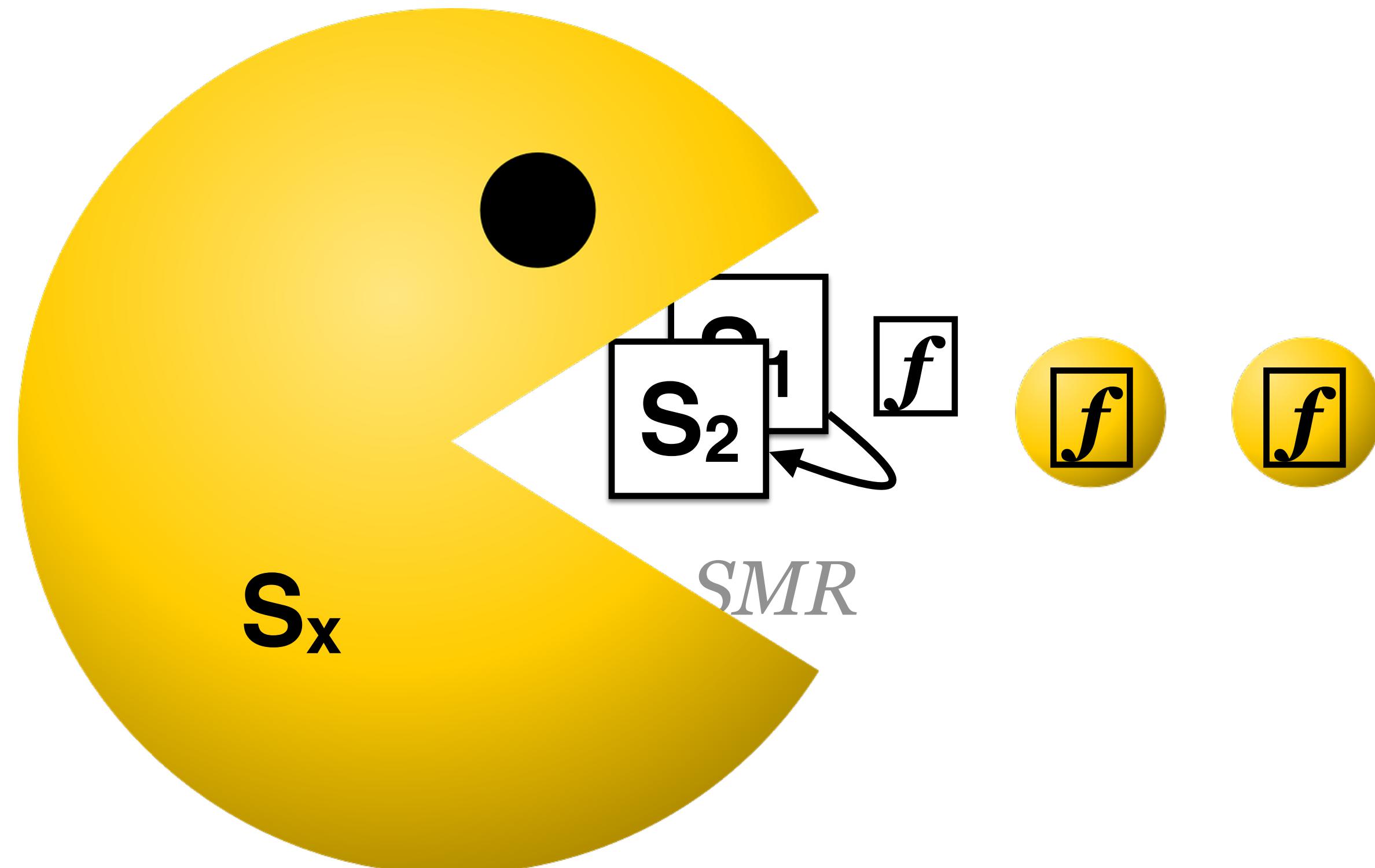
Redux



OOP

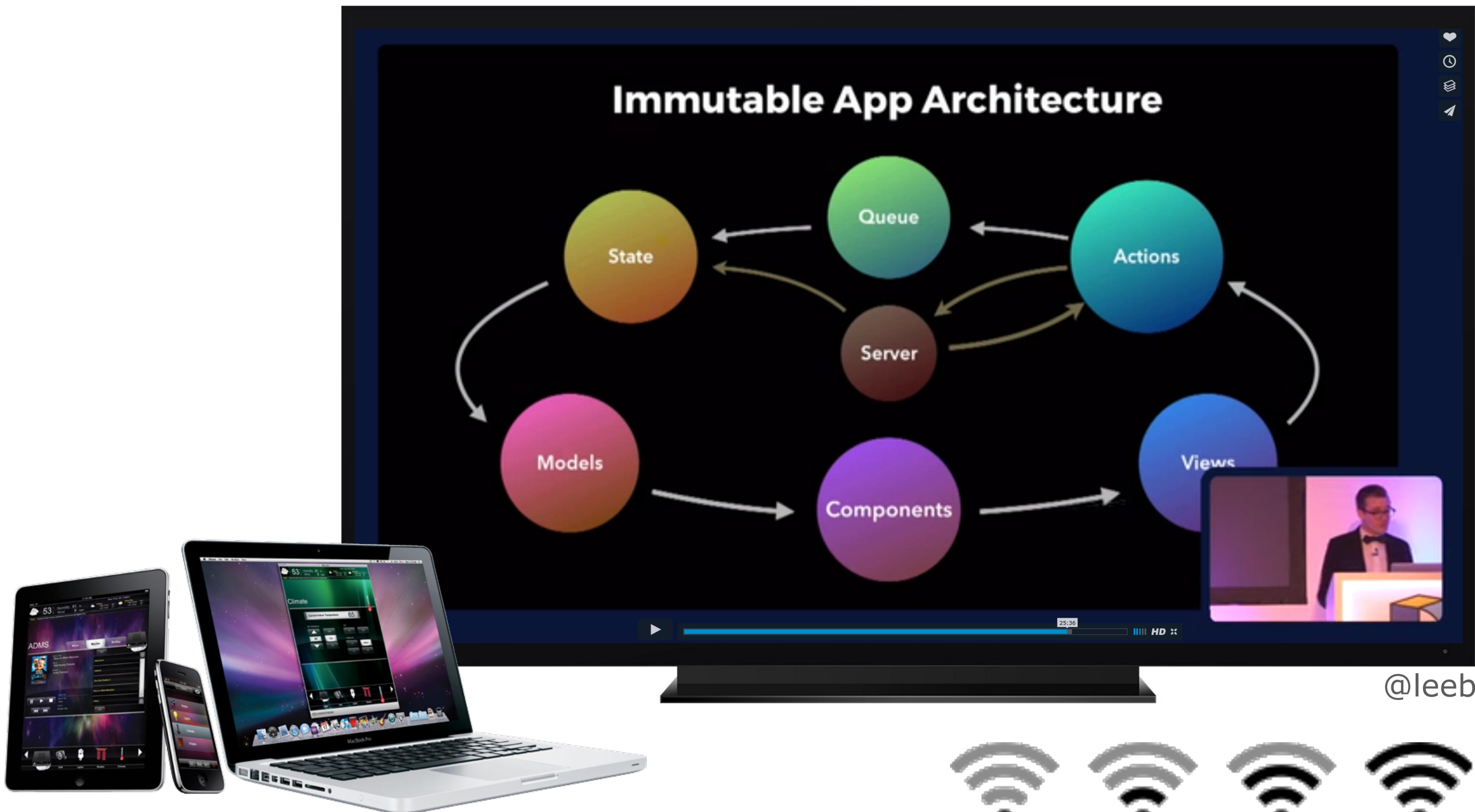


MVCC



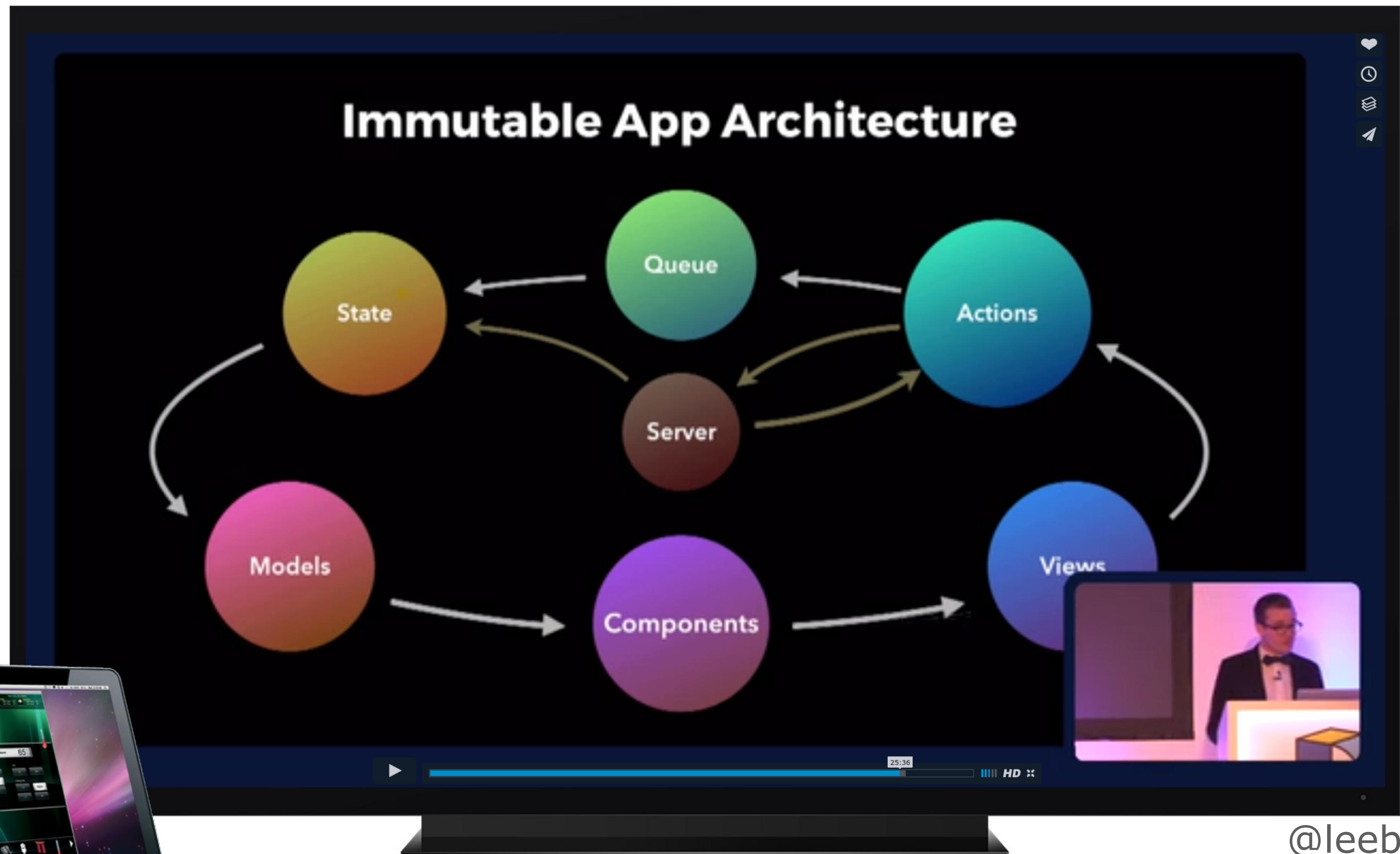
SMR

Синхронизация



Синхронизация

✓ **State**



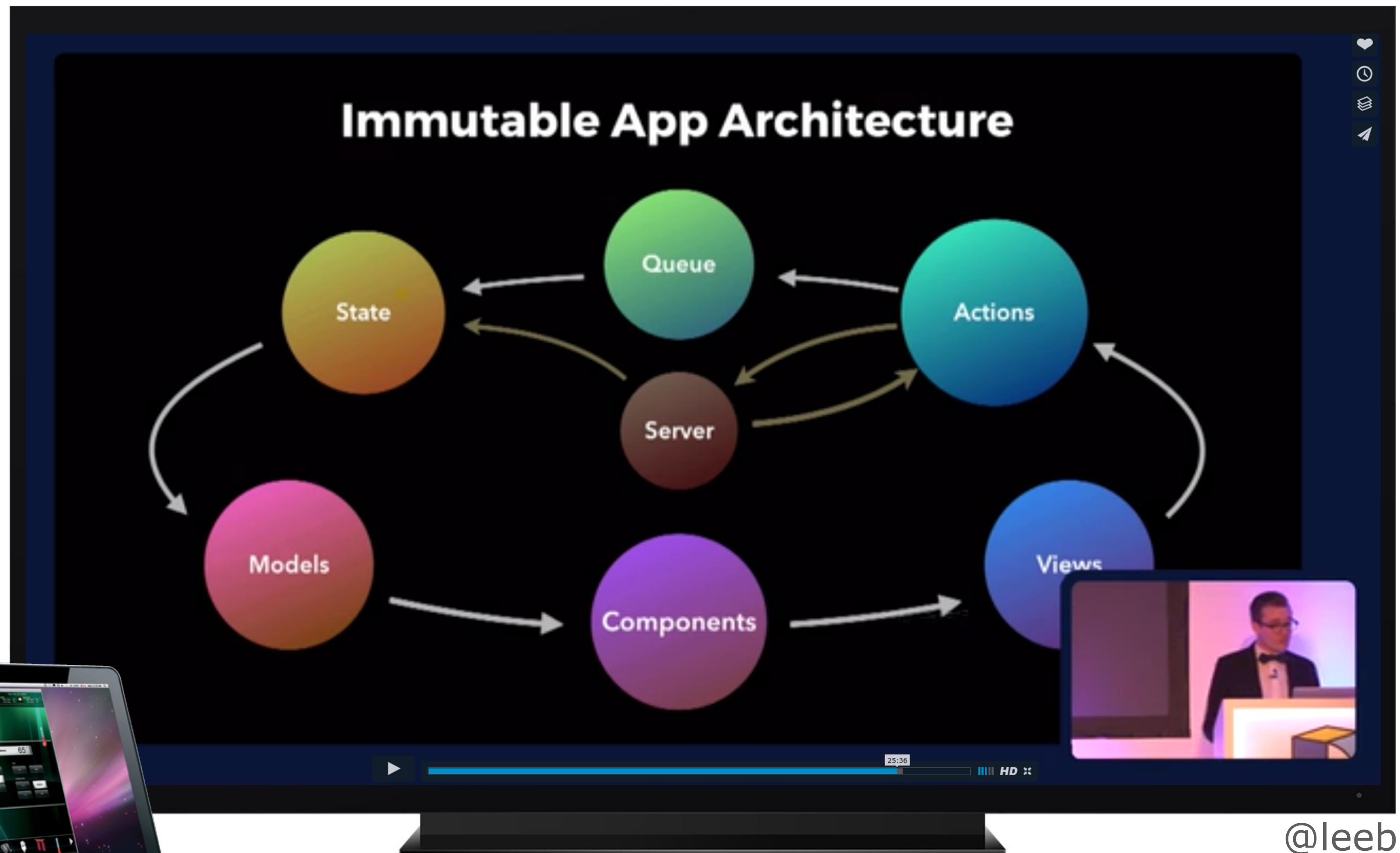
@leeb



Синхронизация

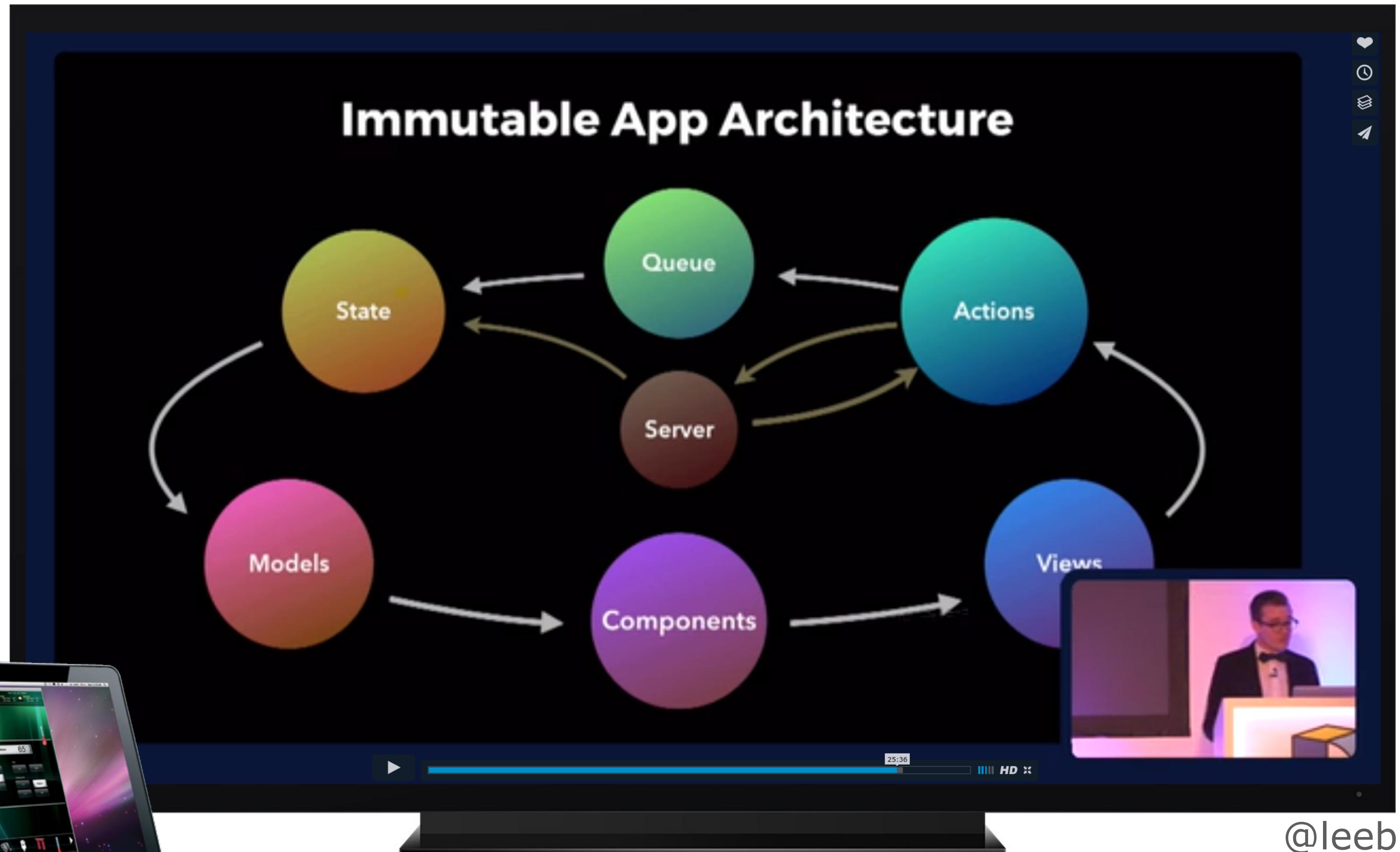
✓ ***State***

✓ ***Inputs***



Синхронизация

- ✓ ***State***
- ✓ ***Inputs***
- ✓ ***Versions***



@leeb



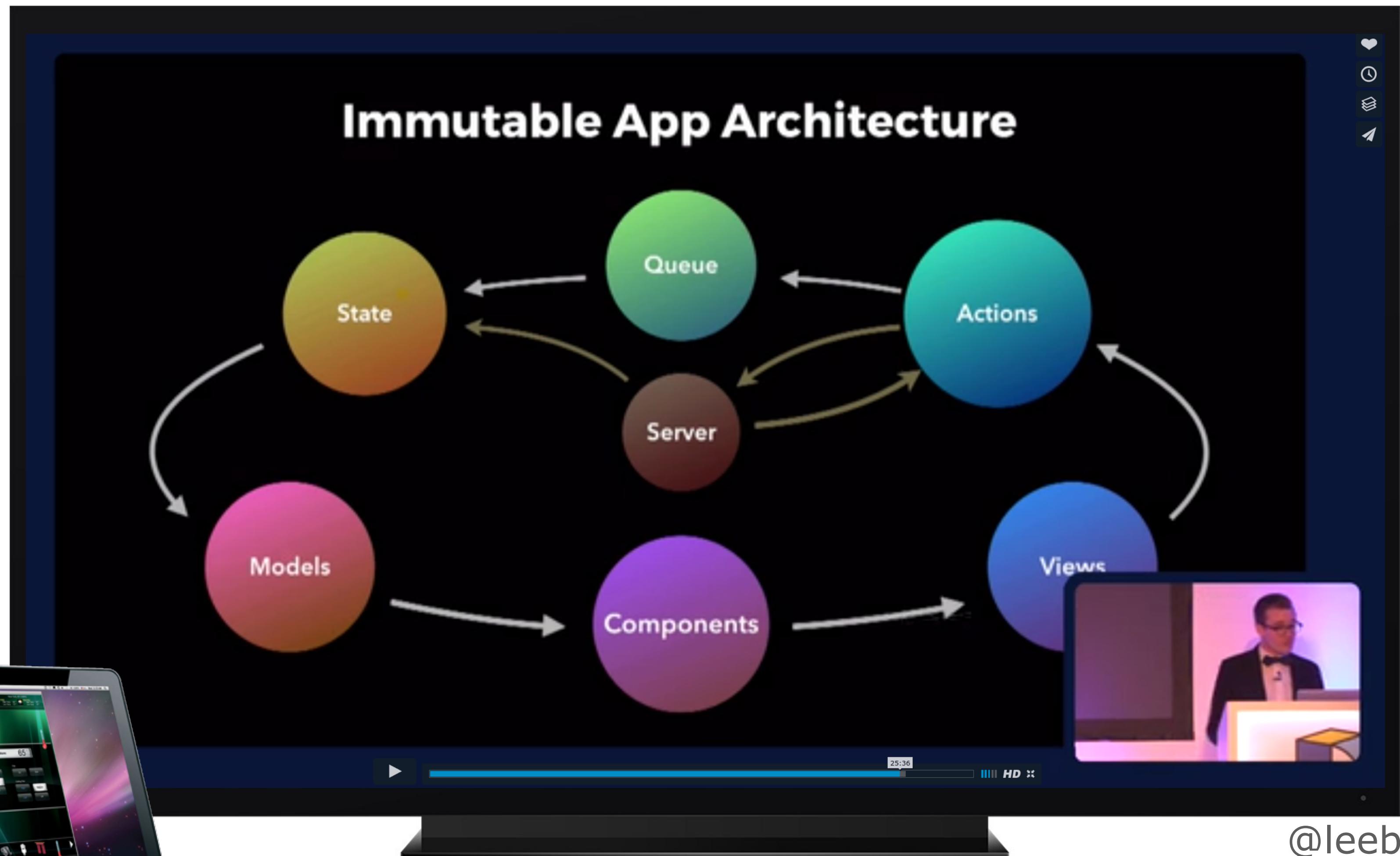
Синхронизация

✓ ***State***

✓ ***Inputs***

✓ ***Versions***

✓ ***QL***

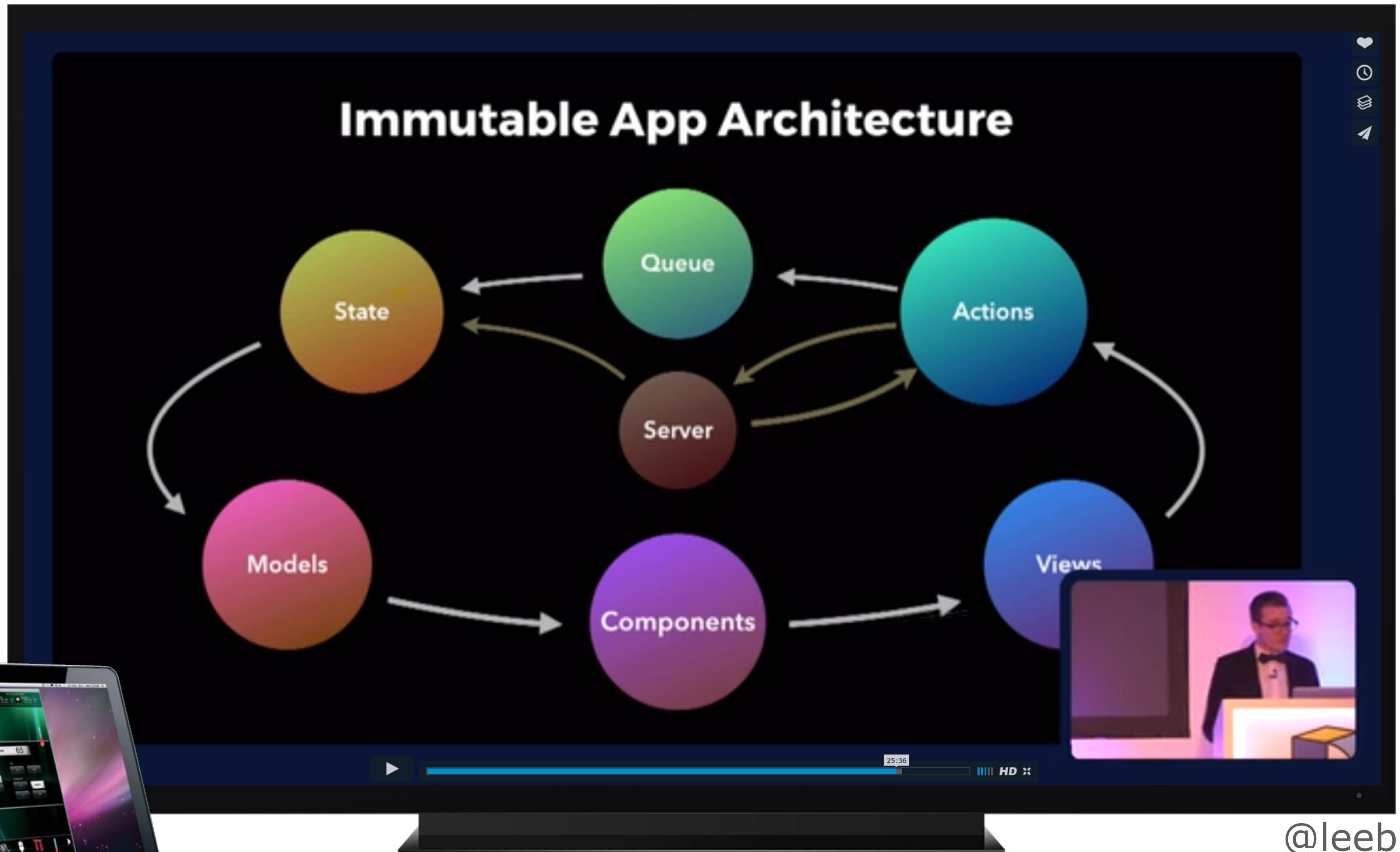


@leeb



Синхронизация

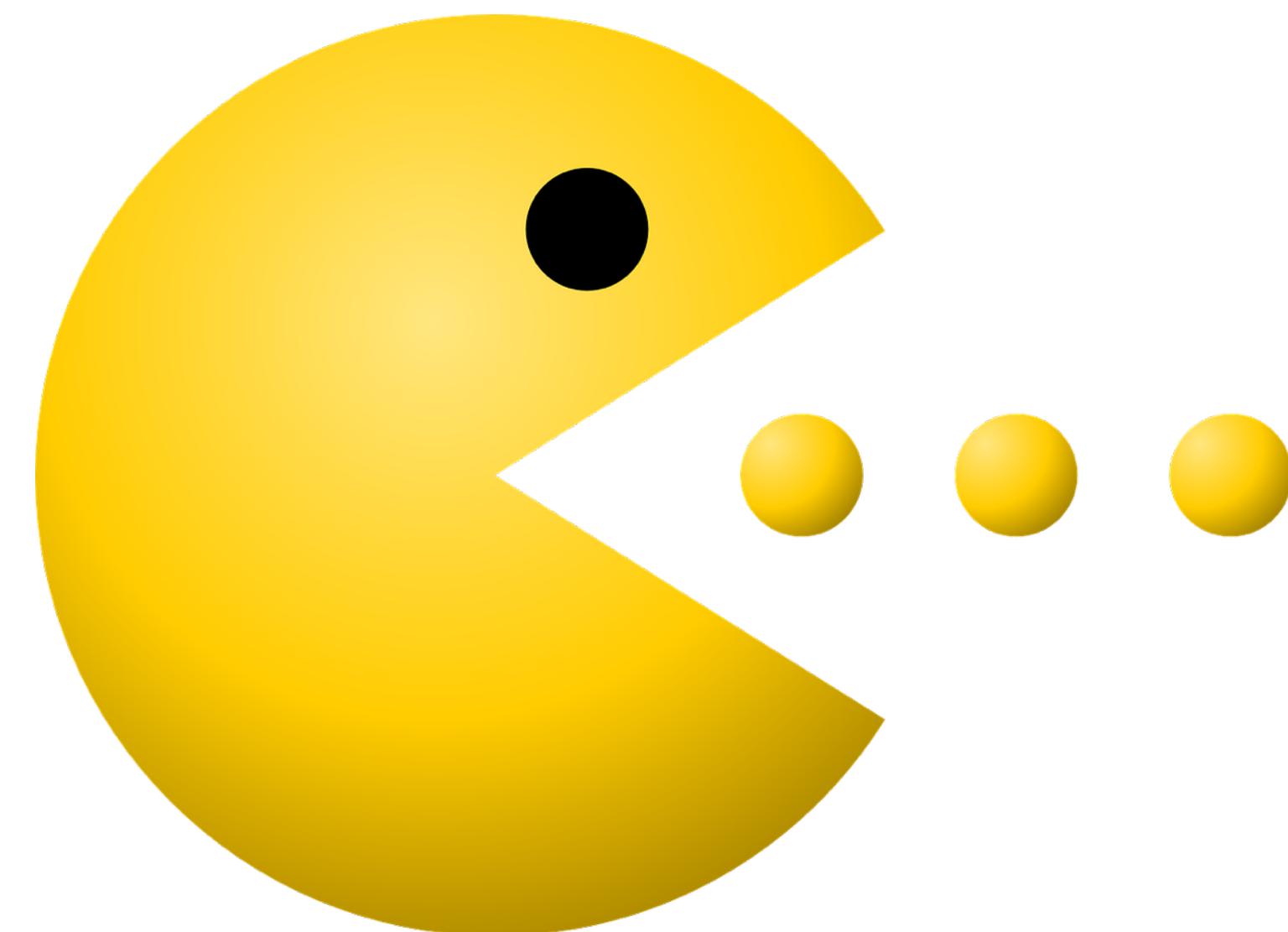
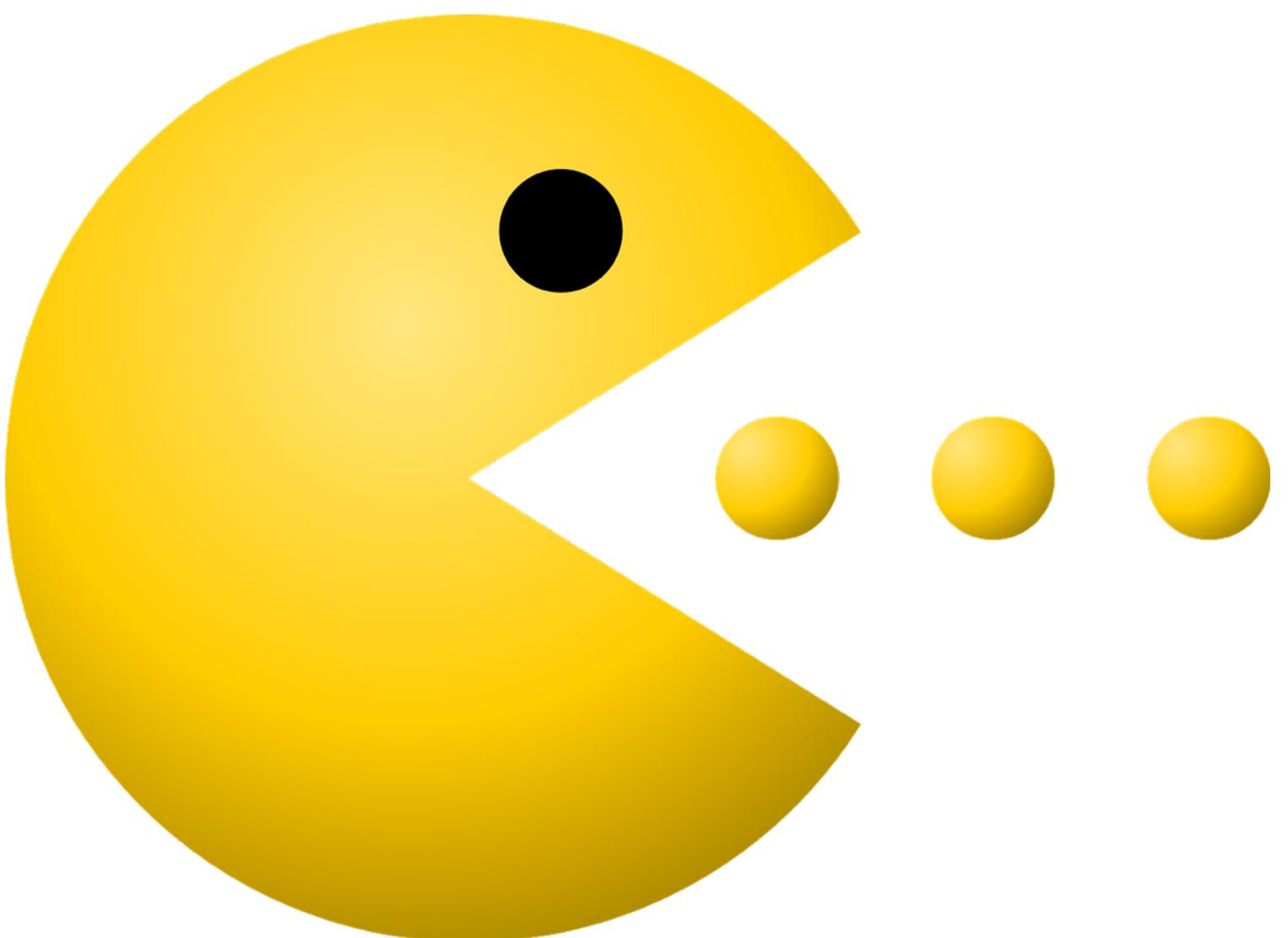
- ✓ ***State***
- ✓ ***Inputs***
- ✓ ***Versions***
- ✓ ***QL***
- ✓ ***Sync***



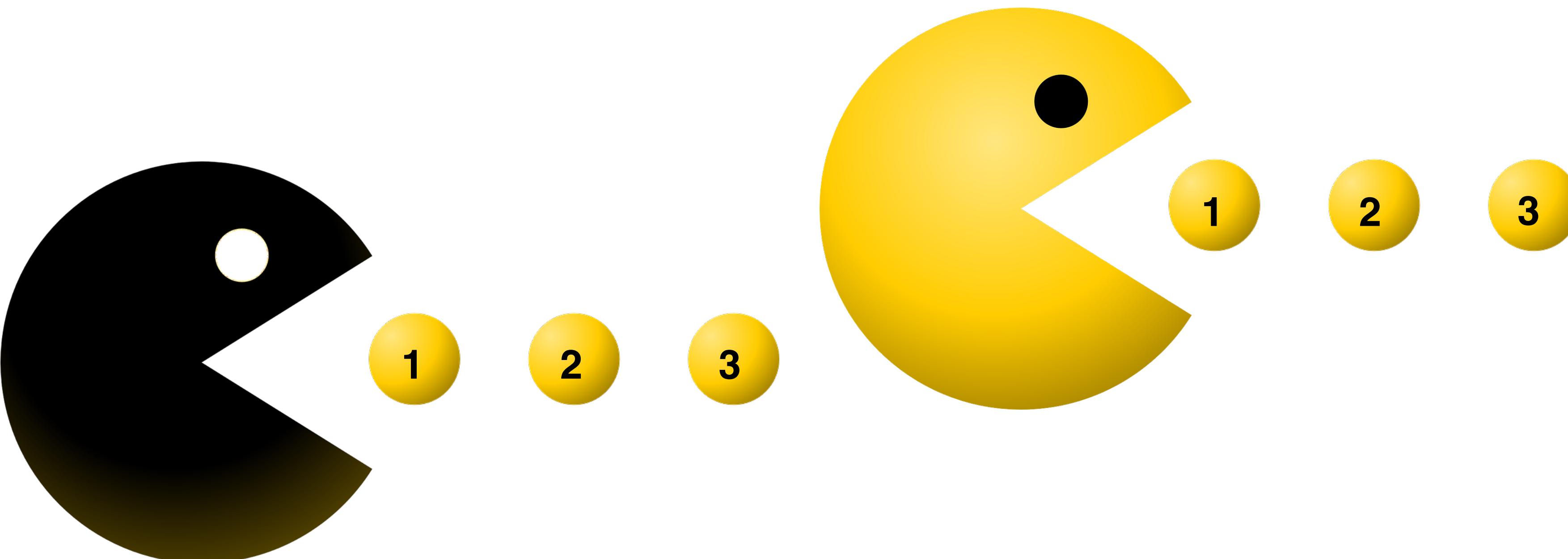
@leeb



STATE MACHINE REPPLICATION



MASTER-SLAVE



{"type": "request", "status": 200, "headers": {"server": "nginx", "x-request-id": "fb81db48-0f63-47a4-81b5-711dc34bac4-6467", "cache-control": "max-age=0, private, must-revalidate"}, "body": "SCMP", "time": 10:27:47.697}	367	10:27:47.697
{"type": "request", "status": 200, "headers": {"server": "nginx", "x-request-id": "02435b6c-d864-42c7-a791-e5e3fac339cc-6467", "cache-control": "max-age=0, private, must-revalidate"}, "body": "SCMP", "time": 10:27:47.698}	833	10:27:47.698
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data:image/gif;base64...

xhr?data=false&seq=...

de78557db2e00586e...

xhr?data=false&seq=...

30 requests | 119 KB tr...

SCMP

HEADER [18,[22,[0,2],[21,["CE9C0C2B-389D-4742-9F51-2B3484EC667C",5],false,null,"0EC08684-D6D6-4220-855D-7C293475321C",false,null,-1,-1,null]]]

COMMAND [[["DF1A4AEC-852C-40CF-86BD-0A8E8A8A8A8A",0,[18,[358,[],false,false,[9],"B7313A93-B414-4325-ABFF-FA7F581253FC/9803FC9F-9880-4A0F-A4DC-F894FD805F44/B549A74E-537A-44C6-A4CE-1825F1559F38/1C70A1F2-13D7-45A5-BAD4-D43938F4DD90",null,[9,[350,[],8,0]],"!","en",[9]]]]]

END

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body": [{"\"id\":755694817, \"revision\":10, \"type\":\"task_revision\"}, {"\"id\":1413911492, \"revision\":1, \"type\":\"task_revision\"}]

w: 1

token: AC4w5VhBxao_0R5...

Form Data

view source

view URL encoded

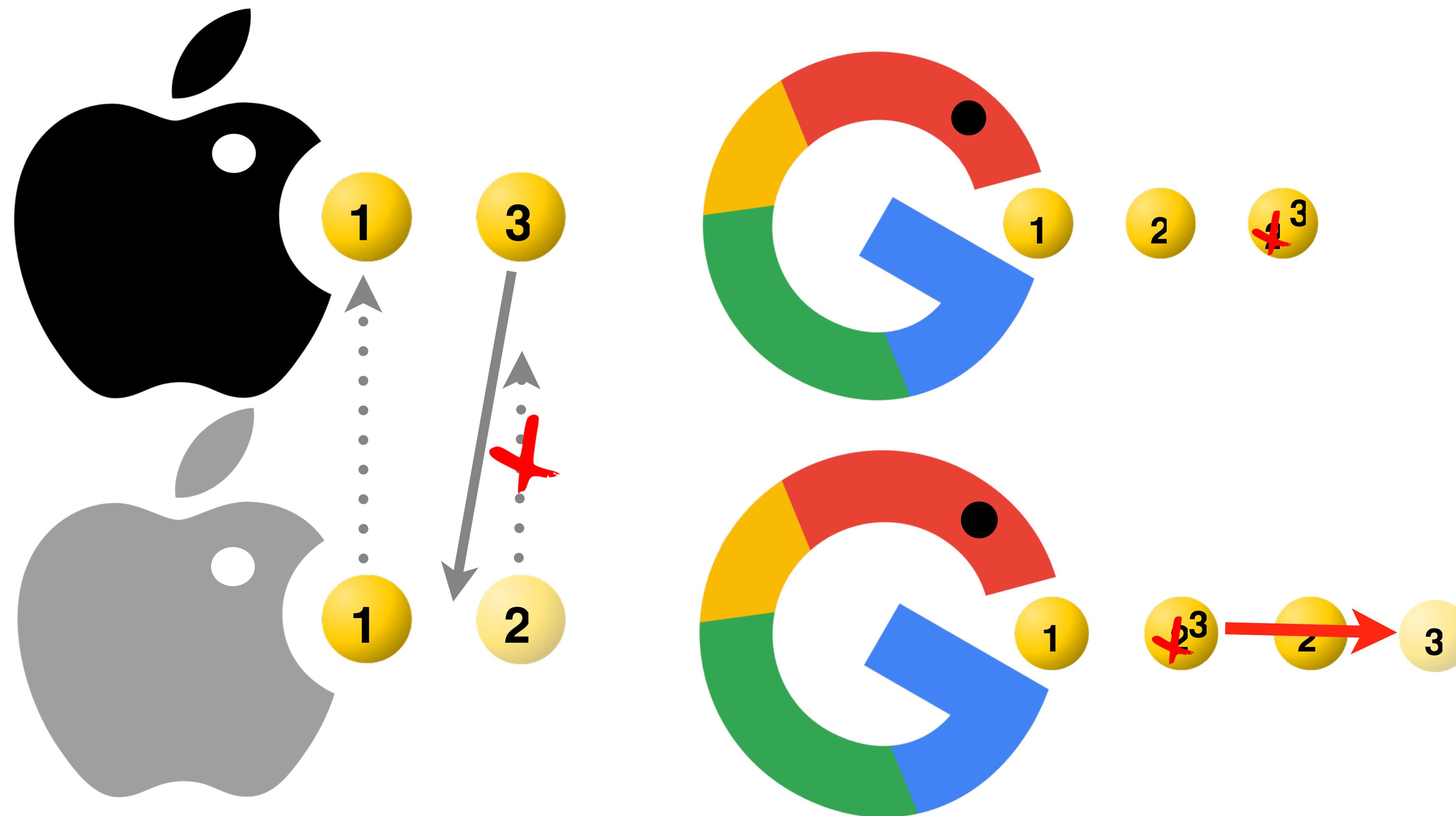
rev: 557

bundles: [{"commands": [{"ty": "is", "ibi": 469, "s": "b"}]}, {"sid": "2329022ecab60873", "reqId": 3}]]

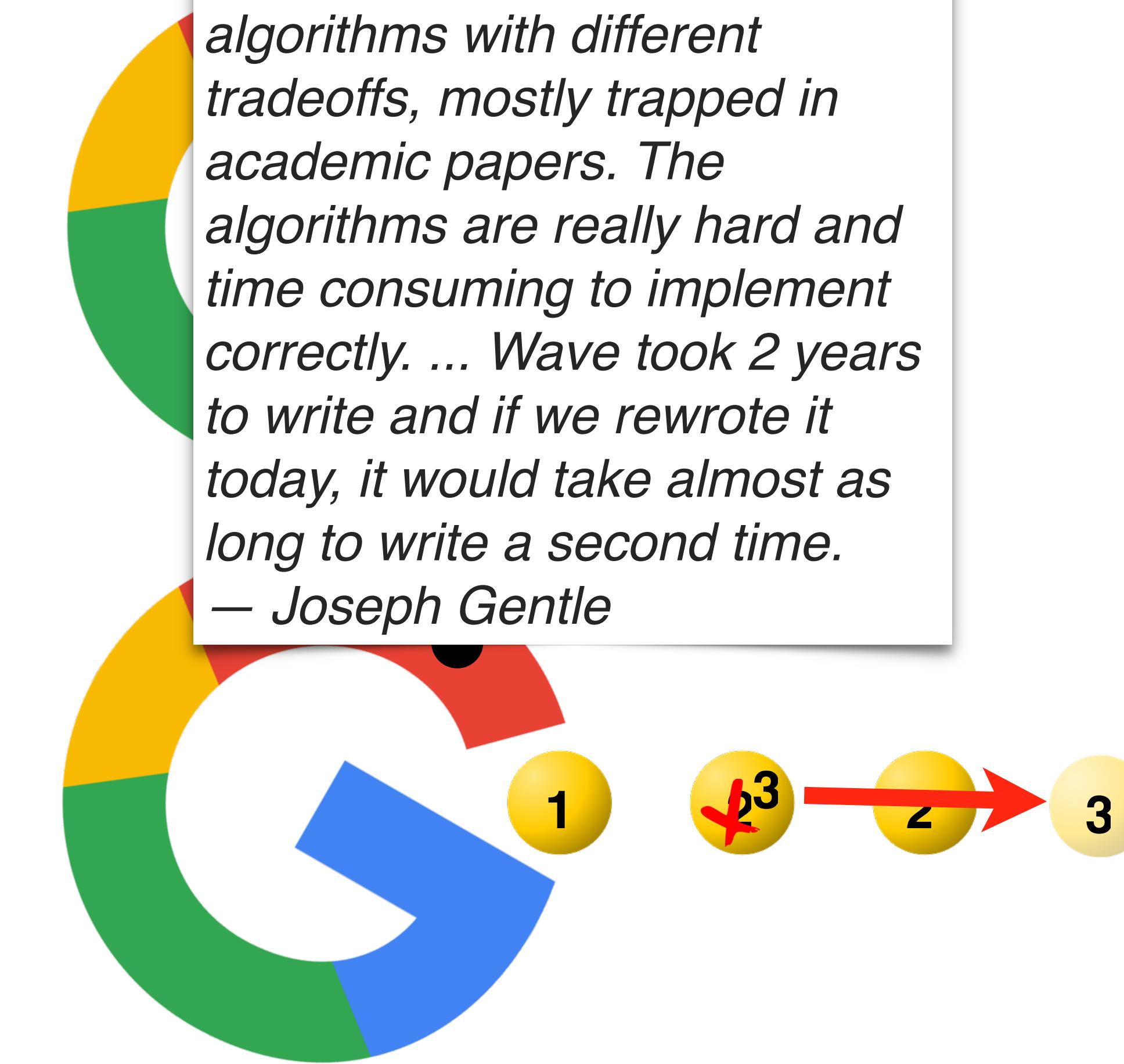
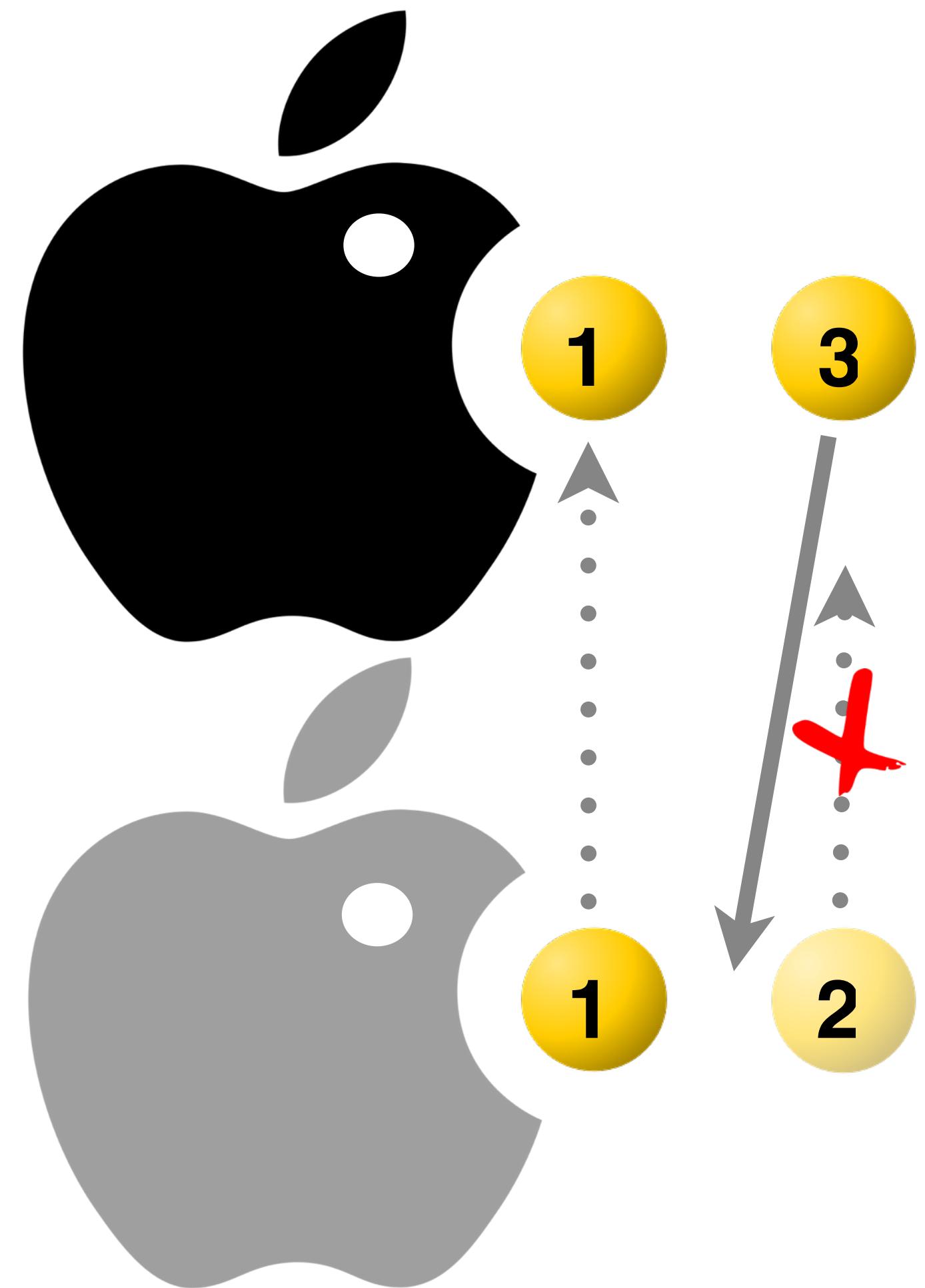
Syncable optimizations:	Alexey Balandin <aleksisha@gmail.com>	2014-10-03 13:43:45
disable coverage generation (it's unstable)	Alexey Balandin <aleksisha@gmail.com>	2014-10-03 13:43:45
Merge pull request #30 from abalandin/master	Victor Grishchenko <victor.grishchenko@gmail.com>	2014-10-22 06:43:10
fix Host.close(): check storage is defined before closing it	Alexey Balandin <aleksisha@gmail.com>	2014-10-03 13:43:45
Merge pull request #27 from abalandin/master	Victor Grishchenko <victor.grishchenko@gmail.com>	2014-10-21 18:30:34
increase tests "maxBlockDuration" upto 10sec;	Alexey Balandin <aleksisha@gmail.com>	2014-10-21 17:35:06
tests for Vector onObjectEvent/offObjectEvent/onObjectStateReady;	Alexey Balandin <aleksisha@gmail.com>	2014-10-21 16:54:05
fix Makefile tasks dependencies	Alexey Balandin <aleksisha@gmail.com>	2014-10-20 17:47:14
add .filter() to Set & Vector; optimize some common Set/Vector operations	Alexey Balandin <aleksisha@gmail.com>	2014-10-21 14:16:32
mixins support in Syncable.extend();	Alexey Balandin <aleksisha@gmail.com>	2014-10-21 13:54:04
a bit more readable README	Victor Grishchenko <victor.grishchenko@gmail.com>	2014-10-23 06:57:50
less deps: no rimraf	Victor Grishchenko <victor.grishchenko@gmail.com>	2014-10-22 20:18:26
Merge branch 'separate-example' of git://github.com/abalandin/swarm into abalar	Victor Grishchenko <victor.grishchenko@gmail.com>	2014-10-21 10:17:30

ВЕРСИИ!!!

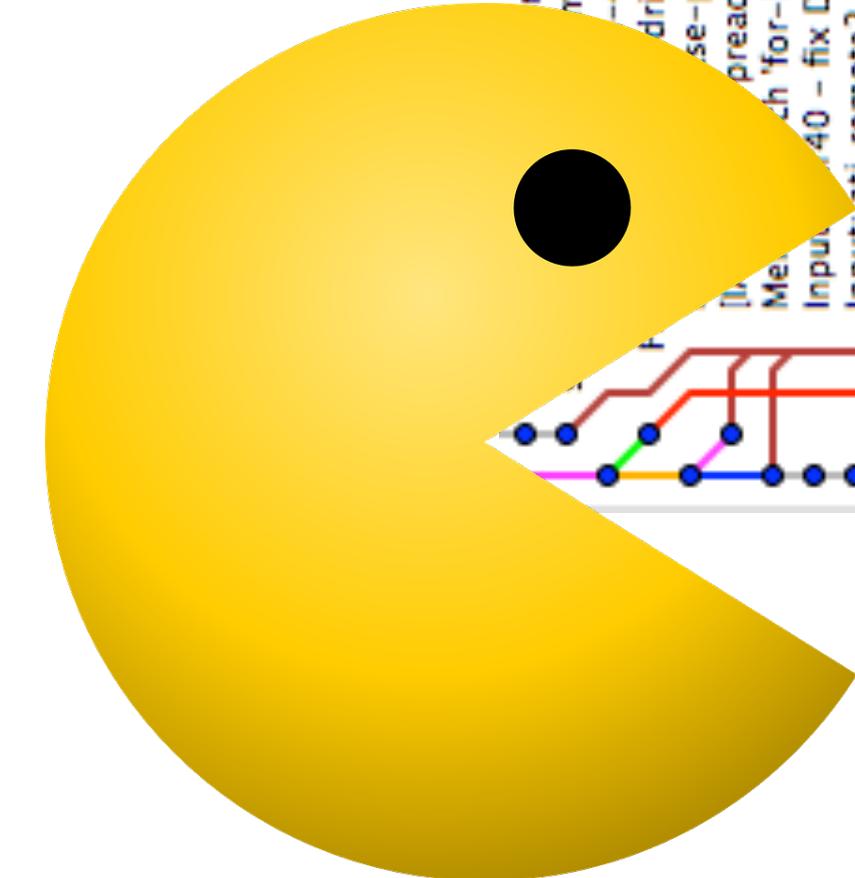
PATCH-BASED OT



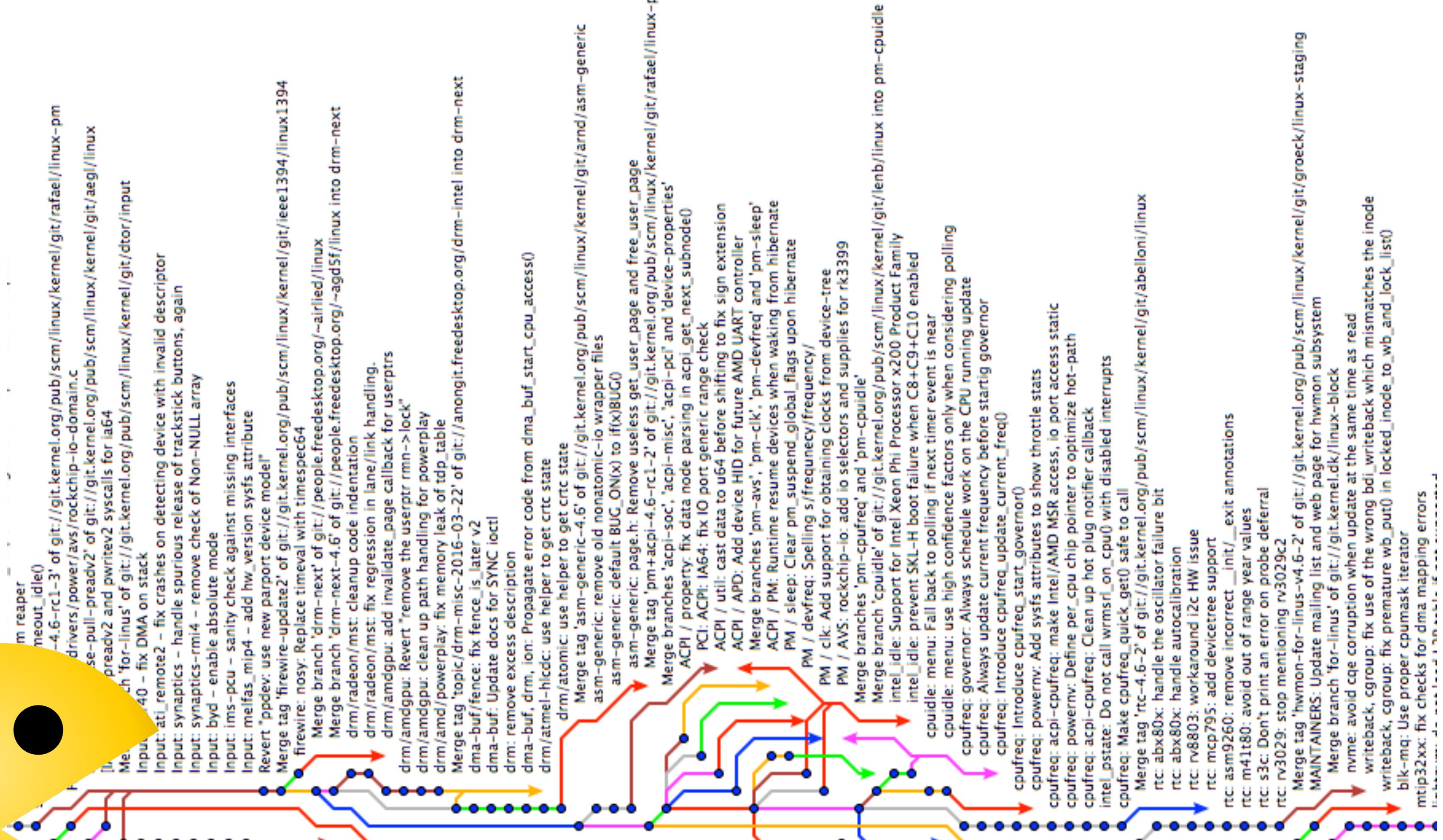
PATCH-BASED OT



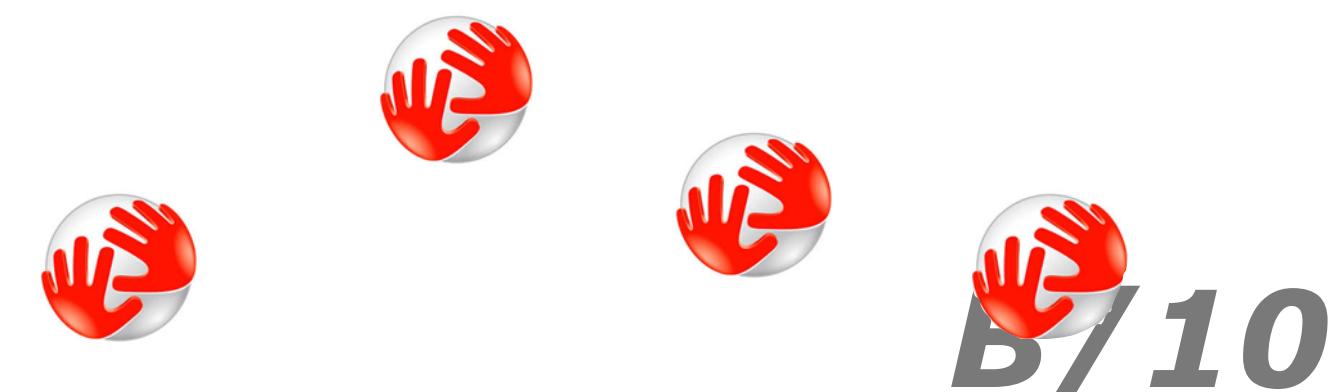
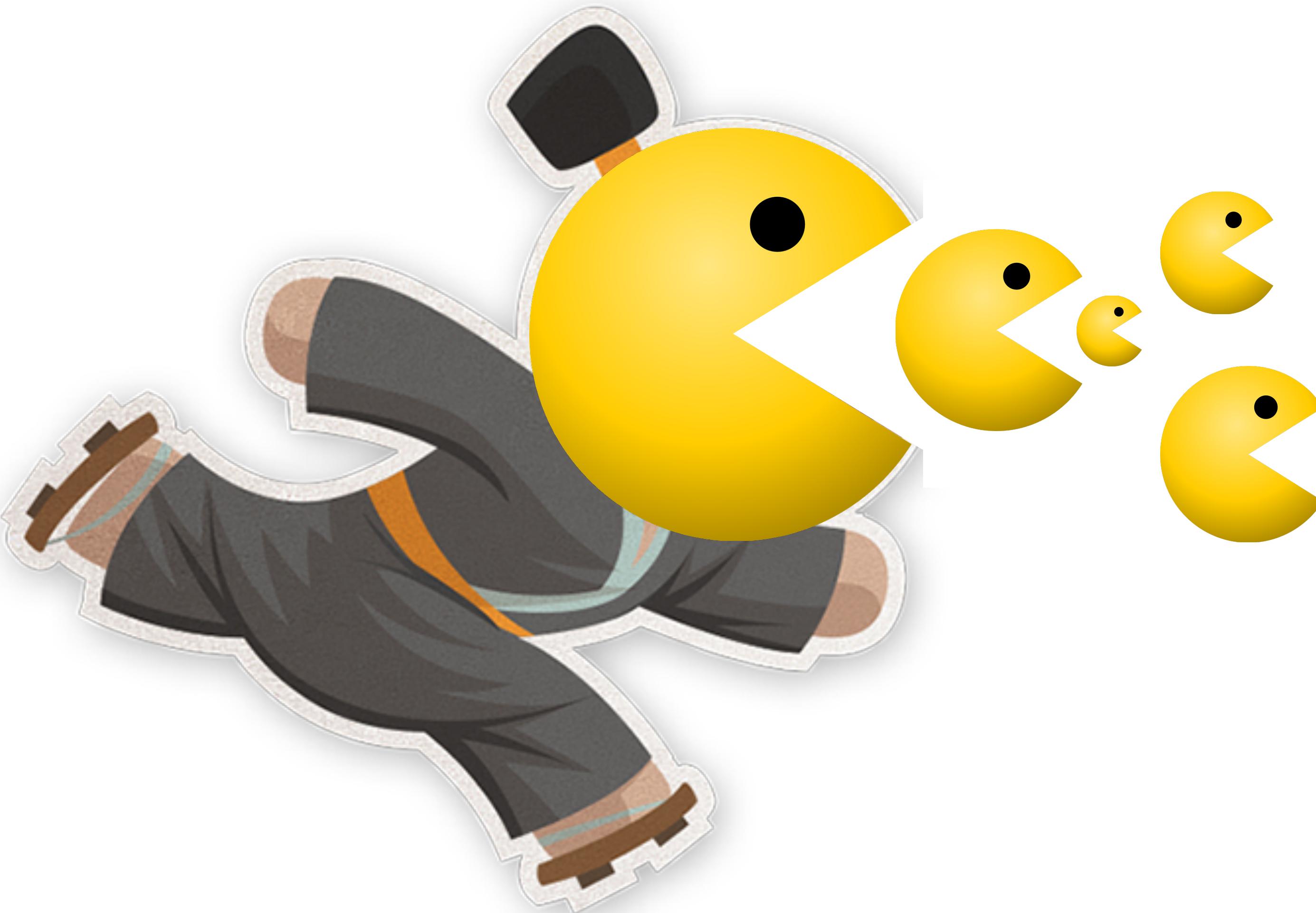
Unfortunately, implementing OT sucks. There's a million algorithms with different tradeoffs, mostly trapped in academic papers. The algorithms are really hard and time consuming to implement correctly. ... Wave took 2 years to write and if we rewrote it today, it would take almost as long to write a second time.
— Joseph Gentle



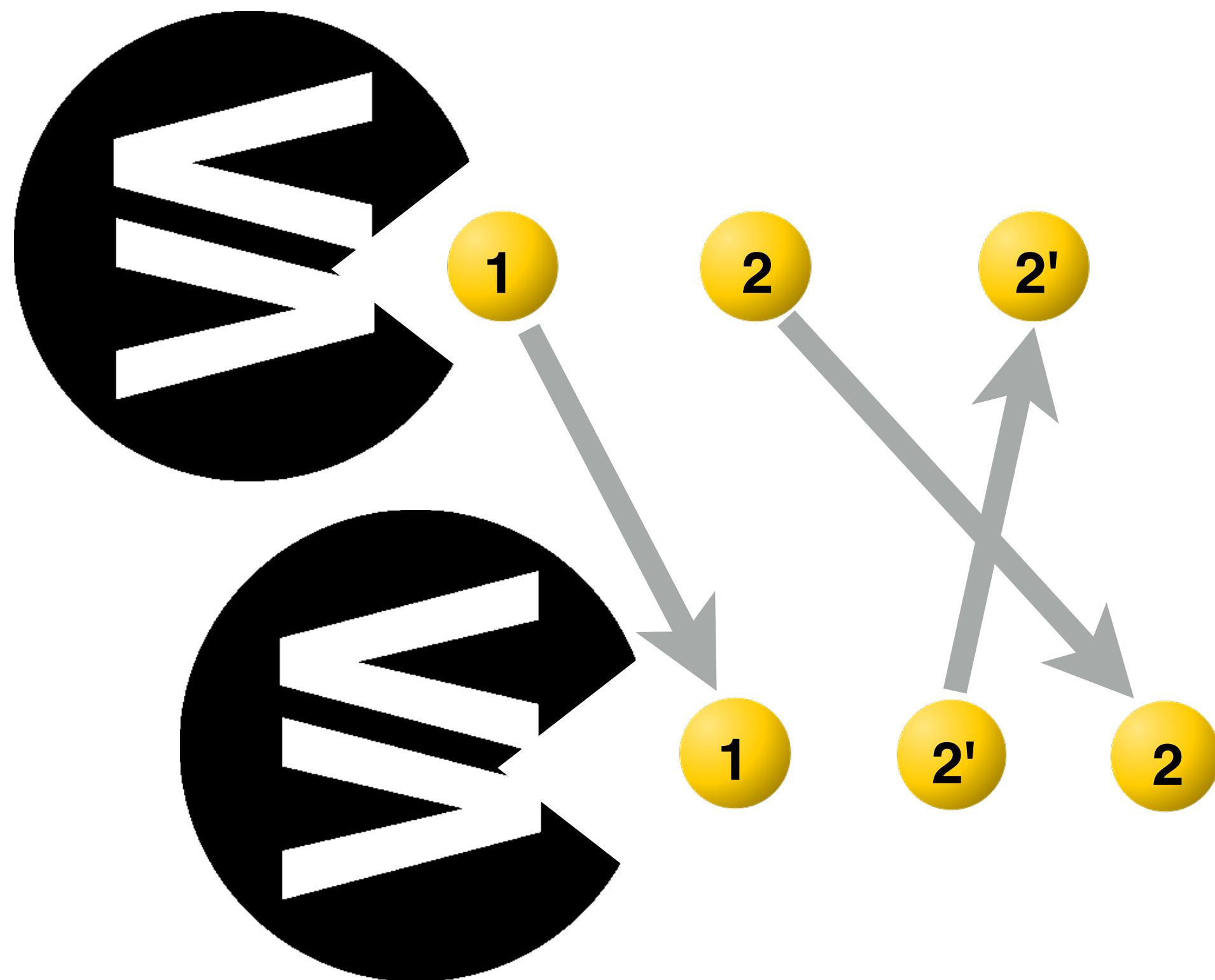
git



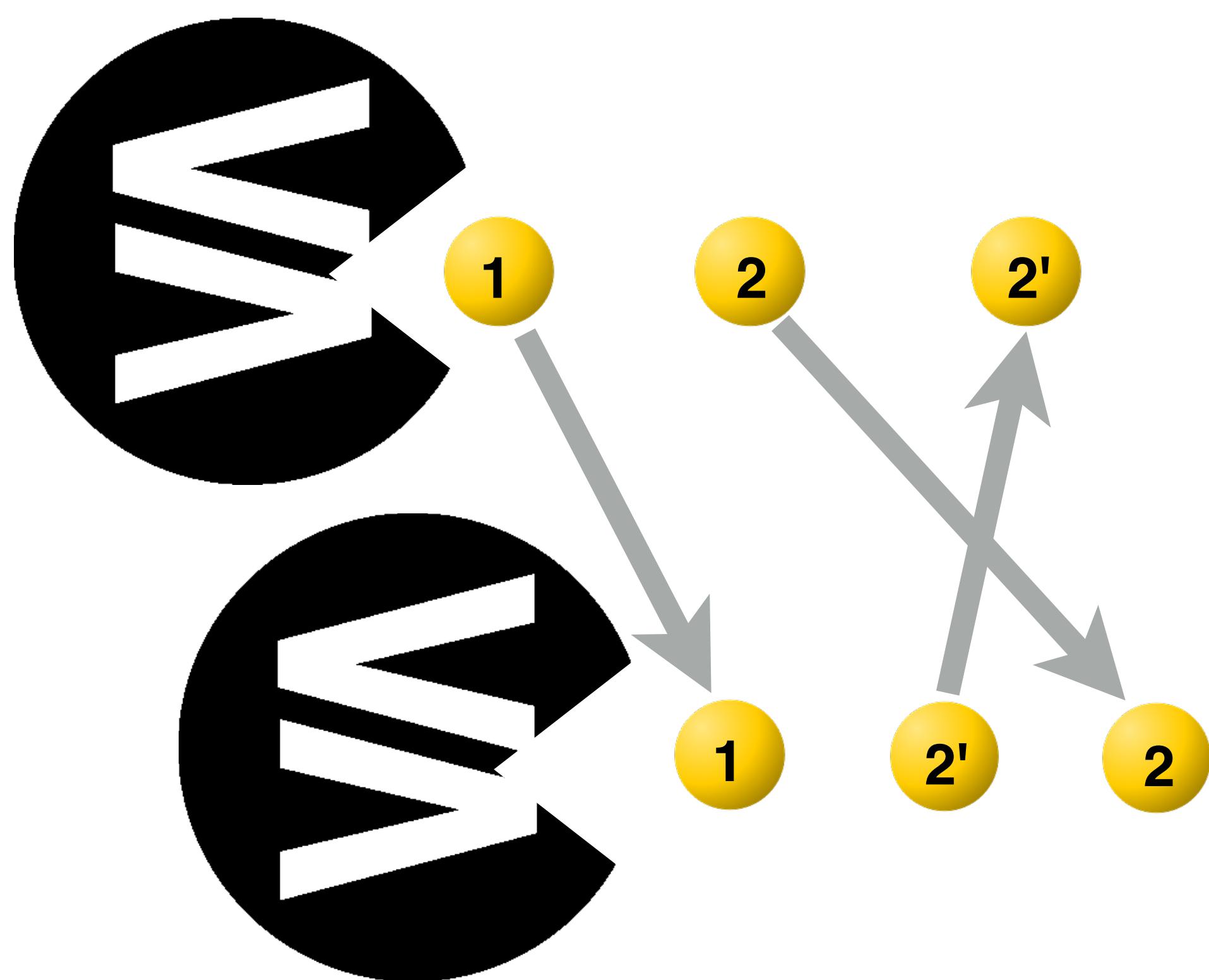
STATE-BASED CRDT



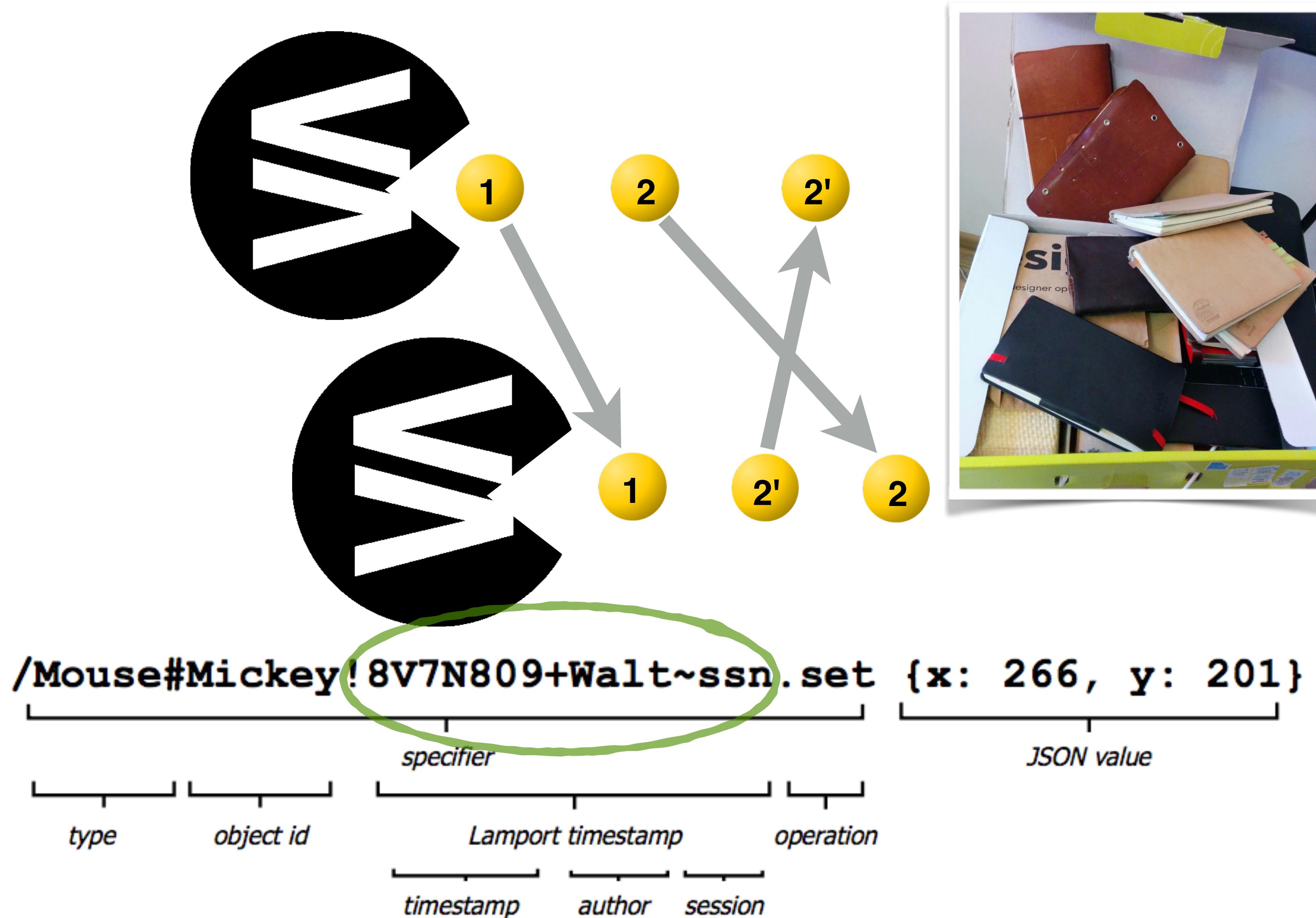
OP-BASED CRDT



OP-BASED CRDT

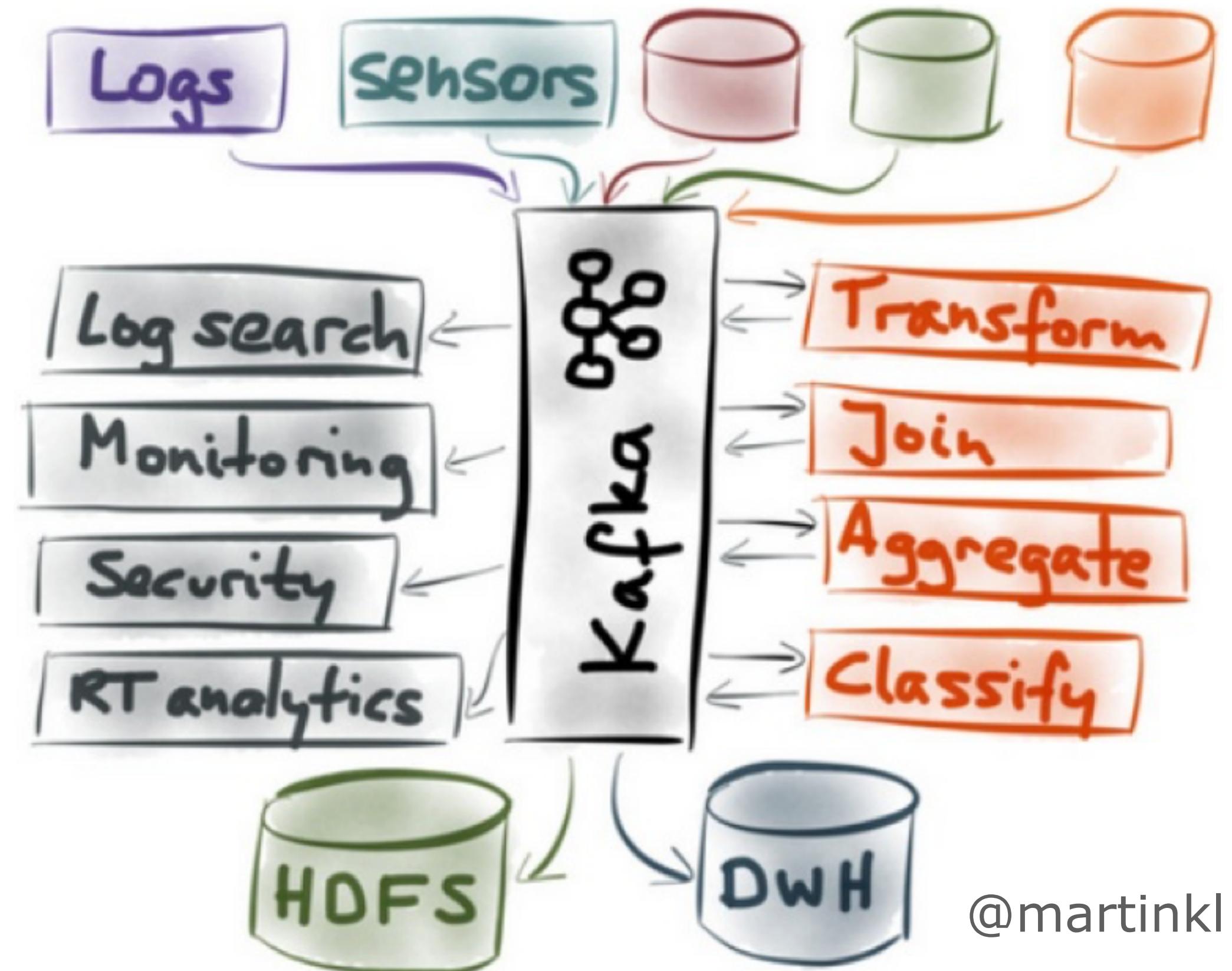
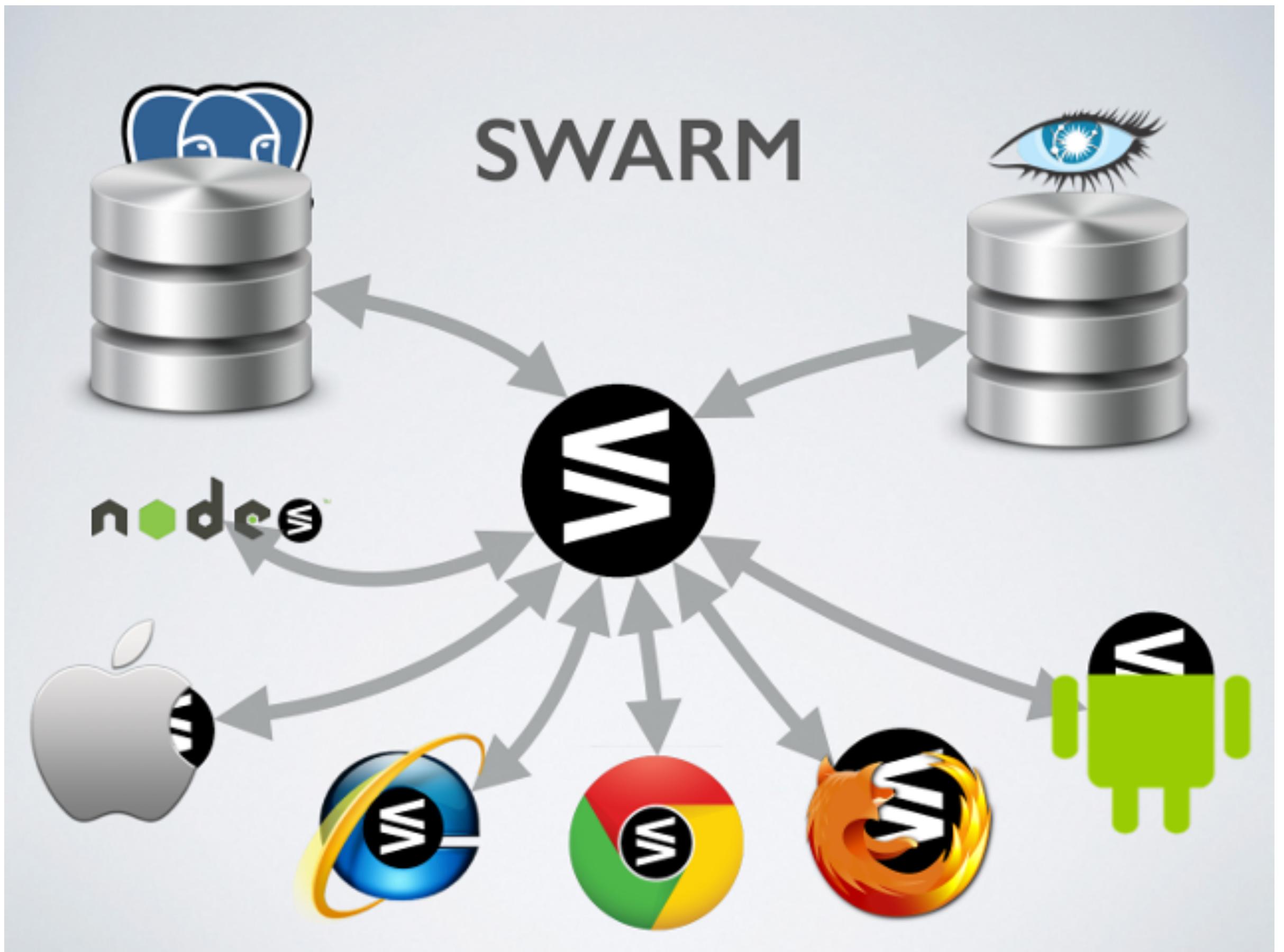


OP-BASED CRDT



SWARMDB

2011
2012
2013
2014
2015 без vv
2016 1.0



@martinkl

D/10

Swarm ops

Object	~ 3	1CRE6I29	Cgritzk0k
1CREA_i	Doolebe0J	title	0

/Object+~3#1CRE6I29+Cgritzk0k!1CREA_i+Doolebe0J.title Hello world!

someObject.set('title', 'Hello world!')

someObject.on('change', fn)

host.on('/Object#0+0oledb.title', fn)

host.on('change:title', fn)

host.on(fn)

Q&A

 @gritzko

 gritzko/swarm

 gritzko/swarm-protocol-docs

<http://swarm-js.slack.com>

 @swarm_js

 swarm.js@gmail.com

gitter: swarmjs

Спасибо!

 @gritzko

 gritzko/swarm

 gritzko/swarm-protocol-docs

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 @swarm_js

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gitter: swarmjs